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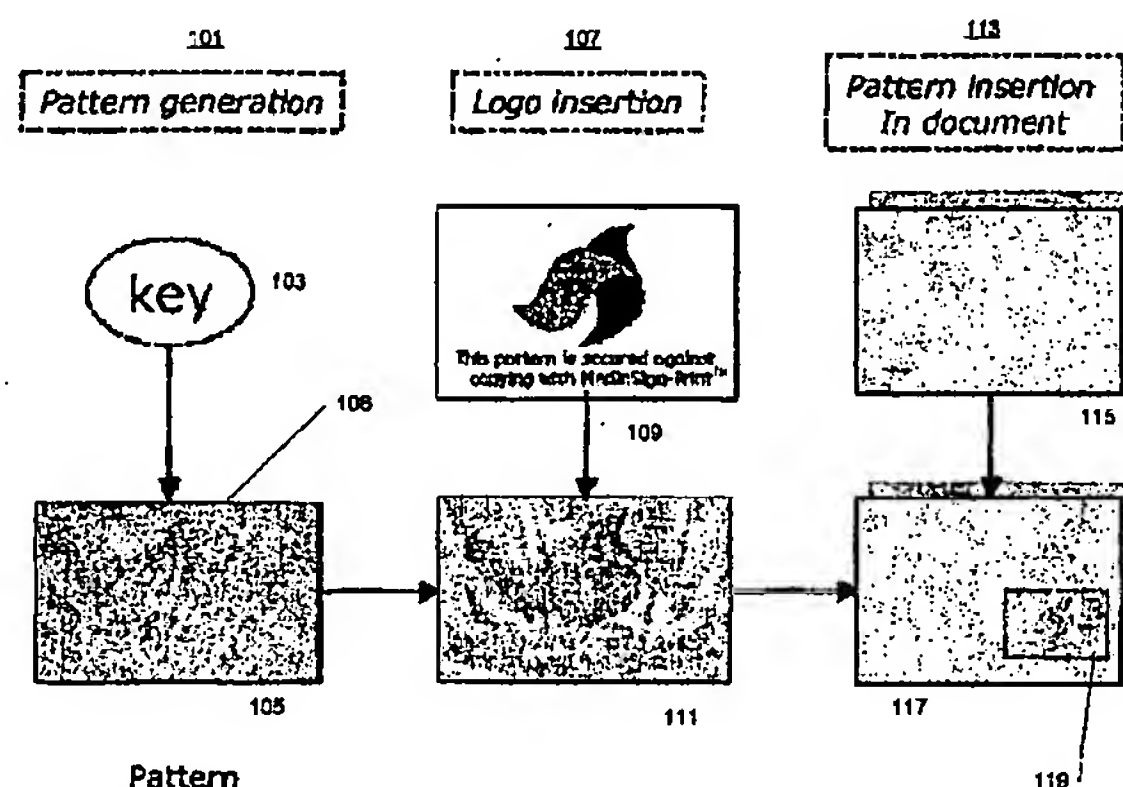
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(54) Title: IMPROVED TECHNIQUES FOR DETECTING, ANALYZING, AND USING VISIBLE AUTHENTICATION PATTERNS



(57) Abstract: Improved techniques for making copy detection patterns and using them to detect copying relationships between digital representations. The techniques include techniques for including a message in a copy detection pattern without altering the copy detection patterns entropy and reading the message, techniques for using a copy detection pattern on an analog form to determine whether the analog form is an original analog form without reference to a digital representation of the original of the analog form's copy detection pattern, techniques for increasing the sensitivity of copy detection using copy detection patterns by modifying one of two copy detection patterns that are being compared to take into account alterations resulting from the copying process, techniques for distributing a copy detection pattern across a document, and techniques for using the entropy of a copy detection pattern to locate the copy detection pattern. Also disclosed are applications of copy detection patterns with copying that involves transformations between the digital and analog forms and with digital-to-digital copying.

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